HOW A WAY WAS FOUND TO THE TOP OF THE WORL

Everest, the highest peak of the Himalayas and the greatest mountain in the world, is scaled. The preliminary expedition seemingly has found a feasible ascent. A base for the final dash is being established well about the 20,000 foot level. When the weather permits in 1922 the final effort will be made. Late advices from London say that Brigadier-General C. G. Bruce. soldier and explorer, has invited to command the been climbers

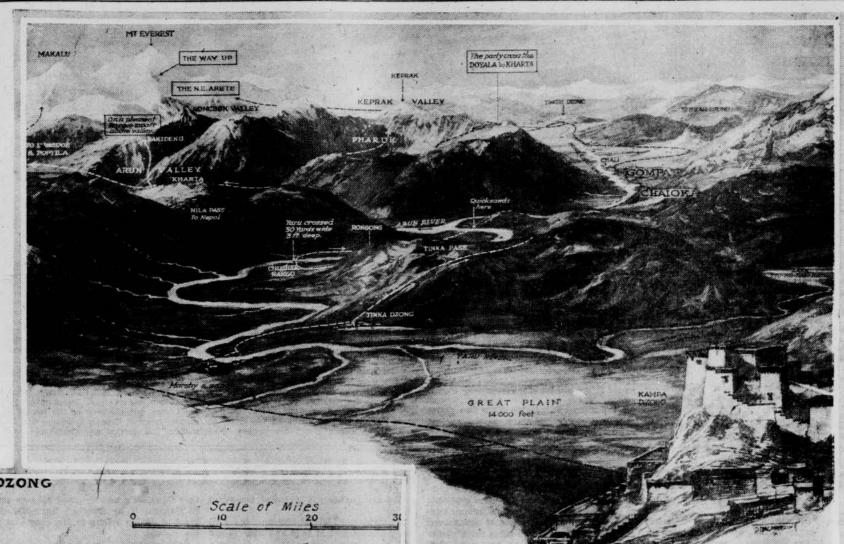
FTER Mount Everest what? The Alexander of exploration, whoever he may be, in the report of progress this year on the highest point of earth must be already sighing for new heights to conquer. But where are they to be sought? Perhaps on the moon, perhaps on Mars,

The history of attempts to scale this top of the world is thick with failures in which human lives have been risked devotedly and many of these lives have been lost. But with each successive expedition progress has been made and men have drawn nearer and nearer to their goal. Each expedition gathered useful knowledge for a future trial, and at last the lonely peak seems about to render up its secret. Certainly the scientists of the world appear to be hopeful that the next exploring party, already being formed, will attain its object. This confidence is based on the results of the expedition sent out last

It was a very carefully organized expedition which started then, under auspices of the Royal Geographical Society and the Alpine Club of Great Britain and assisted

AN'S conquest of the earth probably will be complete Mount Everest's Conquest Seems Assured Next Season, Reports From Preliminary Expedition glacier? Even supposing the ridge summits at 25,000 feet were gained there yet remained some of the most difficult rock Show-Access From Northeastern Glacier Appears Practical and Base Is Being Established 23,000 Feet Up for Final Dash of 6,000 Feet More to Summit

> Panoramic view of the region around Mount Everest, highest mountain in the world, traversed by the Royal Geographical Society's expedition. Preliminary work has been wholly successful. The accompanying maps are self-explanatory. Copyright, The Sphere, London.



TINGRI DZONG MESSES BULLOCK & MALLORYS EXPLORATION Netsogu BASE MOVED TO KHARTA JULY 31. VIEW POINT GORGES OF THE ARUN KHARTA Sakideng Lungdoe NORTH-WESTERN SURROUNDINGS EXPLORED. TIBET-NEPAL BOUNDARY NORTHERN POSSIBLE APPROACH PRECIPICES BASE CAMPS INACCESSIBLE ESTABLISHED AT EASTERN 17.500 & 20,000 FEET APPROACHES IMPOSSIBLE

by the Government of India. May 18 and May 19, the dates when the two parties set out, which comprises the Mount Everest expedition, will be marked dates until their fame shall be dimmed by the date-no longer believed to be uncertain-when another party shall overlook the world from Everest's peak.

For this party of 1921 accomplished what it set out to do. All the approaches to Everest from northeast to west were reconnoitred and a possible route to the summit was discovered on the northeast

Surveyors under Major H. T. Morshead of the Survey of India mapped under great difficulties an area of more than 13,000 square miles of a country previously unknown. Major E. O. Wheeler, second Government of India surveyor, who accompanied the main party to make a special photographic survey of the Everest group. succeeded in doing so to a scale of one inch

Dr. A. M. Heron of the Indian Geological Survey, in charge of the geological work, nvestigated the geology of the whole district, finding many outcrops of limestone, the day it left Gnatong, the last village with telltale fossils revealing the secret of the age of the Himalayas.

A. M. Wollaston, botanist and zoologist. made a most complete collection of all the mammals and birds of the region; also a wonderful flora of seeds of flowers, many of which are new.

Dr. Kellas made a valuable chemical and physical series of researches in questions of oxygen and blood pressures at great heights. Harold Raeburn, member of the Alpine Club, was in charge of the Alpine climbers. Col. Howard Bury had charge of the "publicity" of the party, sending full accounts of its progress from time to time to Darjeeling, whence they were tele-

graphed all over the world. A general statement made by Col. Bury reads:

"A glorious country, with some of the wonderful valleys in the world, about which nothing before was ever known, now has been thoroughly explored and systematically mapped. Some of the greatest beauties of nature hitherto unknown and hidden from man have been photographed."

Barometers Designed Especially

taken along was a mercurial barometer of the George pattern, which only comes into action above 15,000 feet; also duplicate sets Phari, 14,300 feet, a dirty village, above entertained the chiefs at his house, a fine, of aneroids, working only at 15,000 and 20,-000 feet, resptctively; maximum and minimum thermometers, solar radiation thermometers, and boiling point apparatus. These were apart from the instruments of the Survey of India. All the instruments were carefuly tested at the National Physical Laboratory.

Of absorbing interest is the story of the expedition as it appears in a sort of diary form in the manuscripts of Col. Bury. On in Sikkim, it was raining heavily there was no view on the way up the pass, and the hillsides were veiled in mist. The climb of 14,390 feet to the top of the pass was not very steep, but at the summit there were still many patches of last winter's snow Here a heap of stones marked the Sikkim-Tibet frontier.

The descent to the Chumbi Valley is very steep, over 5,000 feet from the top of the pass. Here the vegetation was almost European in character; rhododendrons grew under the shade of dark fir trees, and clematis, spiraea, iris and red and white roses grew in masses beside the descending path.

And so they came to the rich, fertile

through a pretty valley all the way. To For Use in High Altitudes torrent Ammochu, through the lovellest Among other scientific instruments woods of birch, fir and juniper, mixed up

Chumbi Valley, where the broad fields were filled with potatoes and ripening barley. Passing through many prosperous villages Yatung was reached, a really delightful spot, where apples, pears and other small fruits do well, and barley, buckwheat and

potatoes are grown in great quantities. Thence a two days' march led to Phari. within a few miles of this place the expedition marched alongside the rushing with rhododendrons of every color and

Now they entered the real Tibetan country, a country of rolling plains and downs,

which towered the peak of Chomolhari

with views often extending over a couple of hundred miles, At Khampa Dzong on June 5 Dr. Kellas

died of heart disease. His loss was deeply deplored. Here too ensued trouble with the transportation end. The Government mules, as the expedition came to ascending and descending on the Sikkim marches, began to collapse. After every day's march each party had to leave three mules be hind, which were unable to proceed even

The fourth day's march, from Pedong to Rongli, though only twelve miles, was especially trying. The path dropped steeply down nearly 3,000 feet, only to climb up another 3,000 feet in the next few miles, followed by another steep drop of 2,500

After a day's rest at Rongli it was necessary to hire local mules and ponies, leaving the Government mules behind. It was a terrible breakdown of transport at the very beginning of the expedition and after only five days' marches. Luckily it was as far as Khampa Dzong.

The climb from Sedonchen to Gnatong was the steepest yet encountered, with a of more than 5,000 feet in eight miles. On May 24 the party arrived at Gnatong,

at an altitude of more than 13,000 feet. Gnatong is described as a dirty, muddy village, lying in a hollow. It is the first halting place on the way out from Jelep La. A constant stream of mule and pony caravans passes to and from Tibet. From here the party hastened on to Tibet. June 8 is the day they left Khampa Dzong, At Lingga they had their first clear but distant view

On June 11 they left Tinki Dzong. The day's march led over the Tinki Pass, 17,000 feet high, but quite easy, with fine views to the east. They then descended into the broad valley of the Yaru, here carpeted with gorse and yellow flowers. They had to ford this river, which is at that point about eighty yards wide and three feet deep. After crossing a marshy plain they These vanished as they climbed into arrived at the home of Phari Jongpen, who

HANGING GUARDED TERRIBLE PRECIPICES 10,000 FEET THE WAY OPEN NORTH COL 23 000 FT LEADING TO NO MEANS OF APPROACH ON NORTH-WEST NORTH PEAK APPROACH ON EAST QUITE M! EVEREST

solid, stone building, with walls covered by gorse and juniper. Their meal was of dumplings, with soup and chili sauce together with tea, milk and beer. Each guest was expected to eat fifteen dumplings

Found All Maps of Land

Near Mt. Everest Misleading Col. Bury writes at this juncture:

"All maps of these parts now are most isleading, as they are totally inaccurate." Leaving Rongong, the party followed the south bank of the Yaru some ten miles, to where the stream is joined by the Arum and turns to flow south, cutting its way through the Himalayas. A severe march across a sandy valley followed, dangerous with quicksands. Unable to do this cross ing in one day the party camped alongside the quicksands in the dunes, which were being whirled about by a sharp gale.

"Just before dark." wrote Col. Bury. "a most beautiful and lofty peak appeared in the southwest. The drivers called it Chomourf, the Goddess of Turquoise Peak. We which was now only about fifty miles away and stood un quite by itself.

all other peaks, towering into the clear blue sky to an immense height and far surpassing its neighbors in loftiness and

The first halt on the direct route to Lhasa was at Tuna, where there was a comfortable bungalow. The next stage was to Dochen. On the way the party passed a number of goa (Tibetan gazelle), grazing on the plain. They were very wild, never allowing the travellers to approach nearer than 400 yards. Morning in Tibet is described as calm and beautiful, but at midday a strong wind arises and blows with great violence all the afternoon. That this wind is local was shown by the fact that the upper clouds were unaffected.

After passing Dochen the party left the Gyantse road and crossed over the Dug pass, 16,400 feet, to Khe, which lies in the broadest part of the valley, once the bed of Lake Kalatzo. In this valley are ruins of what once must have been an important city. Some of the buildings remaining are of considerable size. Its present name is Khetam, and it flourished in the days before Tashi Lumpo was built.

The next march was to Kheru and from there to Tatsang, about sixteen miles, ss two passes of about 16,450 feet and 17.100 feet. The gradients were easy all the way. The winds around Tatsang blew keenly. During the night the thermometer inside the tents fell to 25 degrees F., which meant at least 15 degrees of frost out-

"In all these parts," writes Col. Bury. "the people know Everest by the name of Chomo-lungma, the goddess mother of the country. This is apparently the Tibetan name for the mountain."

At a height of 18,000 feet camp was established for the combined purposes of training the coolies in snow and ice work and in ascertaining whether there were ways of getting round the terrible precipices, which descend an almost sheer 10,-000 feet straight down to Rongbuk glacier.

To the northwest and west extended great ridges, and again to the north. question was: Would it be possible to remained some of the most difficult rock climbing at still greater heights before the summit could be attained. Hard rock climbing is practically impossible at great heights, demanding too much of the human frame. In this highly rarefied air the extra exertion elemanded was impossible.

Ideal Weather Until July 7.

When Rainy Season Set In

Till July 7 the weather was most favorable for reconnaissance. The mornings were clear till about 10 o'clock, and at sunset the peaks stood out wonderfully clear and distinct. The last rays of the setting sun lingered for many minutes on the topmost cliffs of the highest mountain in the world after the lower peaks had all turned cold and gray.

After July 7 the rainy season was upon the expedition, rain and hail alternated with snow at the upper camps. Visibility was consequently poor and the work was Toward the end of July the base camp was moved round to near Kharta, which is a collection of villages in the Arun Valley, near to the place where the Kharta Tsangpo, a very large glacier stream, joins the Arun river.

By the end of August all the various approaches to Mount Everest from the Tibe tan plateau had been investigated. Tingri was the first base for exploration to the northwest. After making sure that there were no glaciers descending from the Ev erest group toward the Kaprak Valley the Alpine climbers tried the next valley to the east. This is the Rongbuk Valley, and proved to be a direct and easy approach with a good path to the Rongbuk and Choeling monasteries.

The Rongbuk stream springs from great glaciers descending straight from Everest. with one broad arm sweeping down from the west from the great group of mountains 26,000 feet high, and another long arm from the cast coming down from the col. joining Everest, with high snow mountains to the north.

To the west and northwest Mount Everest sends out two huge spurs descending to this glacier, and no means of attacking the mountain were to be found on that side. Direct approach from the north was equally impossible, as the mountain descended in an almost vertical cliff for 10,000 feet.

Heavy Falls of Snow

Hamper Further Exploration The approach up the eastern branch of the Rongbuk glacier to the col Everest appeared practicable, but very long, but be fore it was possible to make any genuine attempt to penetrate this valley the weather broke and heavy falls of snow down as low as 16,000 feet made further

After waiting for a few days, hoping that the weather would improve, the Alpine climbers came down and joined the base at Choebuk, as it was being moved on its way round to Kharta, which is situated to the east of Everest on the next big glacier

stream. From here it was possible to investigate the eastern and northeastern faces of Ever-The only approach to Everest known to the local inhabitants was that from the neighboring valley of Kamachu, or, as it is called higher up, Shinchu. They knew of no approach directly up the Kharta Valley, and, indeed, they themselves never went up there, as the shepherds who graze vaks on its alps in the summer do not be long to them, but are nomads, living near

Shekar Dzong during the winter. Kamachu is a most beautiful valley, and afforded a magnificent and easy approach had many discussion as to what mountain to the mountain, passing right under the it was. In the morning we took its bearing enormous precipices of Makalu, the north-carefully and decided this must be Mount ern peak. After a short visit, however, to this valley, and a careful examination of the eastern face and the great southeast ern ridge of Everest, the climbers found no "It was Everest. It was separated from . possible means of getting up the formidable cliffs which surrounded the Kamgshung glacier, or the ice cliffs overhanging them.

> The northern ridge sweeping down to the north col is unapproachable from this valley, but they saw that there must be another, intermediate, valley between the north ridge and the northeast spur, so they crossed the intervening ridge back again into the Kharta Valley, and then followed the Kharta Valley to its source.

> Here Major Morshead joined the party. and following up the glacier at the head of the valley they found gentle snow slopes covered with spotless fresh snow nearly Thereupon they proceeded knee deep. with great difficulty over the snow covered glacier until they reached a col nearly 23,000 feet up looking on to the north ridge of Everest about a mile further on across another glacier.

Having seen that it was possible to reach the northern ridge of Everest from this valley they started to lay plans for the future attack from this direction. With soft snow and warm weather it is quite impossible to take laden coolies by this route, so the only thing to do was to prepare everything at the base, collect stores, firewood and rations for coolies. get these carried up as high as possible. and then wait till the monsoon conditions abate and the snow, becoming frozen hard. enables a further advance.

With this end in view an advanced base camp was established about eighteen miles up the Kharta Valley at an approximate height of 17,500 feet, and a second camp was formed on the rocks further up the glacier just under the 20,000 feet mark, to which thirteen loads of stores and fuel were carried.

From this point arrangements were at once made to establish a camp somewhere between the 23,000 feet and 24,000 feet levels on the slopes of Everest itself.

The route, the only one at all practicable. had been found, Everest, after centuries was in danger of losing its secret!

Yes, a way up had been found.

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